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Applicant respectfully requests entry of the foregoing amendment to claims 1, 4, and 11 prior to further examination.

Claim 4 was rejected under 35 U.S.C. §112 as being indefinite. Claim 4 now depends from claim 3 which does provide antecedent basis for the claimed data interface and power supply ports.

The claims were also rejected under 35 U.S.C. 102(b) as being anticipated by Yeom, *et al.*, U.S. Patent No. 5,327,323. The Examiner was of the opinion that Yeom, *et al.* disclose all of the elements of Applicant's claims 1, 5, 11 and 12.

The present invention is directed to a sled module, which is a type of chassis for mounting a mass storage device such as a Hard Disk Drive (HDD). The ends of such a circuit sled module typically contain connectors that are intended to mate with corresponding connectors to the HDD. Industry standards provide HDD devices in known dimensions, such as in 3 ½ inch "widths". However, these standards do not specify predetermined locations for data interface ports and power ports, or the "height" or "length" of such devices. Thus, the data interface and power ports of various brands and types of HDDs are not at all in exactly the same place. Thus, while it would be desirable to provide some sort of circuit sled module in which to mount HDDs and then in turn, have the circuit sled modules fit inside electronic subassemblies such as trays or racks, this has previously been impossible, without providing for specialized circuit sled modules for each different manufacturer's HDD package.

The invention is a single circuit sled module which can adapt to fit a variety of brands and sizes of mass storage devices, such as HDDs. Adjustments are made through the use of spacers located on either side of the mass storage device and the sled module. The result is a structure which provides for the ability to mate the power supply and data interface connectors directly to the power supply and data interface ports on a variety of mass storage devices, without the need for data or power cables or to accommodate different mounting hardware for different manufacturer's devices.

As shown more particularly in Figs. 4 and 5 of Applicant's specification, the back of an exemplary HDD 6 has a port 40 for receiving a power supply connection and a port 42 for

receiving a data interface connection. In a standard desktop computer housing, these ports are typically connected to a power supply or HDD controller card via flexible cables. In the present invention it is necessary to mate these ports 40 and 42 directly with a corresponding power supply connector 36 and data interface connector 38 that are freely mounted in a defined position to the rear of sled module 2. This configuration eliminates the need for cables.

However, the exact location on the back of the HDD 6 of the power supply port 40 and data interface port 42 is not standard across a variety of HDD brands. The present invention is able to accommodate a variety of different HDDs that have a variety of locations of these ports through the use of the spacers 30. For example, one or more spacers 30 can be provided in different thicknesses to adjust the side-to-side positioning of the HDD 6 within the housing 8. Additional flexibility in this design is provided by the hole 32 provided in the cover 10 of the sled module 2. Since not all manufacturers make their HDDs of the same “height” (or width as the HDDs are oriented on their sides in the drawings), the hole 32 and the cover 10 allows the HDD to extend as far as necessary outside the sled module 2. Thus, there is no height restriction on the particular HDD units that may be used.

The resulting advantage of this design is that the sled module 2 can have a uniform size and connector configuration regardless of the type of HDD 6 that is used. Thus, a single sled module 2 may be manufactured to accommodate having different HDDs provided by different suppliers, and yet the enclosures in the which the sled modules 2 are fit may also remain the same. These advantages of the invention is set forth in pages 4 and 5 of the specification as originally filed.

Turning attention to the claims, claim 1 now more specifically recites the fact that the spacers permit the sled to allow adaptation to mass storage devices having different “configurations of connectors”. We respectfully submit that the Yeom prior art does not provide or suggest this capability.

More specifically, the Examiner was of the opinion that the guide 5, as shown in Yeom, was the same as Applicant's spacers 30. However, Yeom assumes that the disk drive unit itself will be of an assumed stated form factor. The guide 5 is not the equivalent of Applicant's spacer 30 at all. It is just a fixed sidewall. Indeed, the guide 5 is more like Applicant's sides 8. All that the guide 5 in Yeom is appearing to do is to fill empty space. Yeom does show connectors 40

and 41 in his Fig. 2. However, these are simply mounted in a fixed, predetermined position on an interface circuit board 4. His 'sled' if you will, has fixed sides that assume a fixed and known relationship to the connectors 40 and 41.

In contrast to this, in the Applicant's invention different spacers 30 are used to position the disk drive device properly so that different manufacturer's connectors and mounting hardware are properly aligned. In fact, Yeom does not recognize this problem of misalignment of connectors at all. There is no mention in Yeom of the fact that different disk drive manufacturers will have different rear connector configurations.

For these reasons we believe that the rejection on claim 1, 5, 11, and 12 was improper and should be withdrawn. The prior art does not teach or suggest Applicant's claimed spacers that permit adaptation to different control signal connectors.

Certain other claims were also rejected as being obvious in view of the Yeom prior art. Because Yeom does not recognize the problem solved by the invention, it cannot be said to render Applicant's invention obvious. As mentioned above, Yeom has no discussion of the need or the desirability to adapt a sled module to accommodate hard disk drive or other mass storage devices provided by different manufacturers that will have different signal connector configurations. The recognition of a problem, and a presentation of a solution to such a problem, is one of the most important indicia of an invention.

All of the claims were also rejected under 35 U.S.C. 103(a) as being obvious in view of Sherry, U.S. Patent No. 5,757,617 and Wakita, U.S. Patent No. 5,488,538. The Examiner was of the opinion that the Sherry patent does not teach providing spacers to accommodate different mass storage devices. We agree. However, the Examiner did believe that Wakita teaches the use of spacers for positioning a mass storage device within a housing.

As with the Yeom prior art, we also believe that the spacers are used to fill a space along the lateral sidewalls of a disk drive chassis 5. The spacers are not chosen to adapt the rear connectors of the disk drive unit to a sled module or other enclosure. Indeed, Wakita does not even show the rear connectors at all!

Regarding claim 2, the Examiner thought that since Sherry shows a cover 88, that it would be obvious to provide a hole in a cover to allow "easy access to the mass storage device" contained therein. But the "hole" in the Applicant's sled module cover has a very different



purpose than simply "allowing access". The hole is there to permit the disk drive to be positioned with respect to the sled module, so that the rear connectors can be aligned. The hole in the Applicant's device thus permits the same sled module to accommodate disk drives that have different "heights" as well as different "vertical" positioning of their rear connectors. Since Sherry does not consider the problem of accommodating different disk drives in a given sled module, it certainly cannot be said to render the Applicant's claim 2 obvious.

In view of the foregoing remarks and amendment to the claims, we believe that the Applicant's claims are now in condition for allowance.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned at (978) 341-0036.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By

A handwritten signature in black ink, appearing to read "David J. Thibodeau, Jr.", written over a horizontal line.

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MARKED UP VERSION OF AMENDMENTS

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Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

1. (Amended) A sled module for a mass storage device comprising:
 - a housing;
 - a circuit board mounted to a portion of the housing, the circuit board having an end mounted connector for control signals;
 - a mass storage device having an enclosure and a control signal connector; and
 - spacers positioning the mass storage device within the housing at a position juxtaposed with respect to the circuit board such that the signal connectors on the circuit board and the mass storage device are aligned with one another, the spacers thus permitting the sled module to adapt to mass storage devices having [enclosures] control signal connectors with different configurations.
4. (Amended) The sled module of claim [2] 3 wherein the spacers position the mass storage device such that the data interface and power supply ports on the mass storage device mate with data interface and power supply connectors on the circuit board.
11. (Amended) A method for mounting a mass storage device having an enclosure and a control signal connector comprising:
 - providing a sled module comprising a housing, a circuit board mounted to a portion of the housing, the circuit board having an end mounted connector for signals;
 - positioning spacers within the housing such that the mass storage device, when inserted into the housing, is positioned with respect to the circuit board such that the signal connectors on the circuit board and the mass storage device are aligned with one another the spacers thus permitting the sled module to adapt to mass storage devices having control signal connectors with different configurations; and
 - inserting the mass storage device within the housing.